

The species is named for Floyd Werner, entomologist, who served under Harry Hoogstraal on the Chicago Natural History Museum Philippines Expedition and who has collected some very interesting ectoparasites.

I wish to thank Dr. Karl Jordan, J. H. E. Hopkins, and F. G. A. M. Smit, of the British Museum, for reviewing the manuscript.

LIST OF ABBREVIATIONS

A.B.	Antepygidial bristle.	L.M.	Lateral metanotal area.
AE.A.	Aedeagal apodeme.	L.P.	Labial palpi.
A.I.T.	Armature of inner tube of aedeagus.	MB.	Manubrium.
A.M.S.	Apical or apicomedian sclerites of aedeagus.	M.D.L.	Median dorsal lobe.
AP.R.9	Apodemal rod of ninth sternum.	MPM.	Mesepimere.
B.I.T.	Narrow band of inner tube extending distad of apex of sclerotized inner tube.	MPS.	Mesepisternum.
B.C.	Bursa copulatrix	MTM.	Metepimere.
CR.	Crochet of aedeagus.	MTS.	Metepisternum.
C.S.	Crescent sclerite.	P.	Immovable process of clasper.
D.A.L.	Dorsal anal lobe.	P.A.9	Proximal arm of ninth sternum.
D.A.9	Distal arm of ninth sternum.	PL.A.	Pleural arch of metathorax.
F.	Exopodite or movable finger.	PN.	Penis.
		PPS.	Proepisternum.
		P.R.	Penis rods.
		P.S.	Proximal spur of aedeagus.
		R.	Dorsal ridge of lateral metanotal area.
		S.I.T.	Sclerotized inner tube.
		SN.	Sensillum.
		SP.	Spermatheca.
		V.A.L.	Ventral anal lobe of proctiger.
		VC.1	First vinculum.
		VC.3A.	Accessory link below third vinculum.
		V.I.R.	Ventral intramural rod.
		V.R.	Ventral ridge.
		7S.	Seventh sternum.
		8S.	Eighth sternum.
		1T.	First tergum.
		8T.	Eighth tergum.

ZOOLOGY.—*A new species of Terebripora from the Pacific (Bryozoa Ctenostomata).*¹

JOHN D. SOULE, Allan Hancock Foundation, University of Southern California. (Communicated by Waldo L. Schmitt.)

As early as 1920 Canu and Bassler lamented the lack of information available concerning the anatomical details of burrowing bryozoans, but until the publication by Marcus in 1938 of "Bryozoarios Perfuradores de Conchas" the anatomy and ctenostomatous affinities of the burrowing Bryozoa remained completely unknown. In this work Marcus discussed and figured the anatomy of *Terebripora ramosa* d'Orbigny, 1847, and *Spathipora sertum* Fischer, 1866. No further work pertaining to the anatomy of this type of burrowing Bryozoa appeared until 1946, when Silen published the results of his research on two new families of burrowing Bryozoa, the Penetrantiidae and the Immergentiidae. The following year, 1947, Silen adequately pointed out the futility of basing the specific classification of burrowing Bryozoa entirely upon their zoarial tracings made in the shells of mollusks. With regard to this, Silen pointed out how some of the species previously assigned to

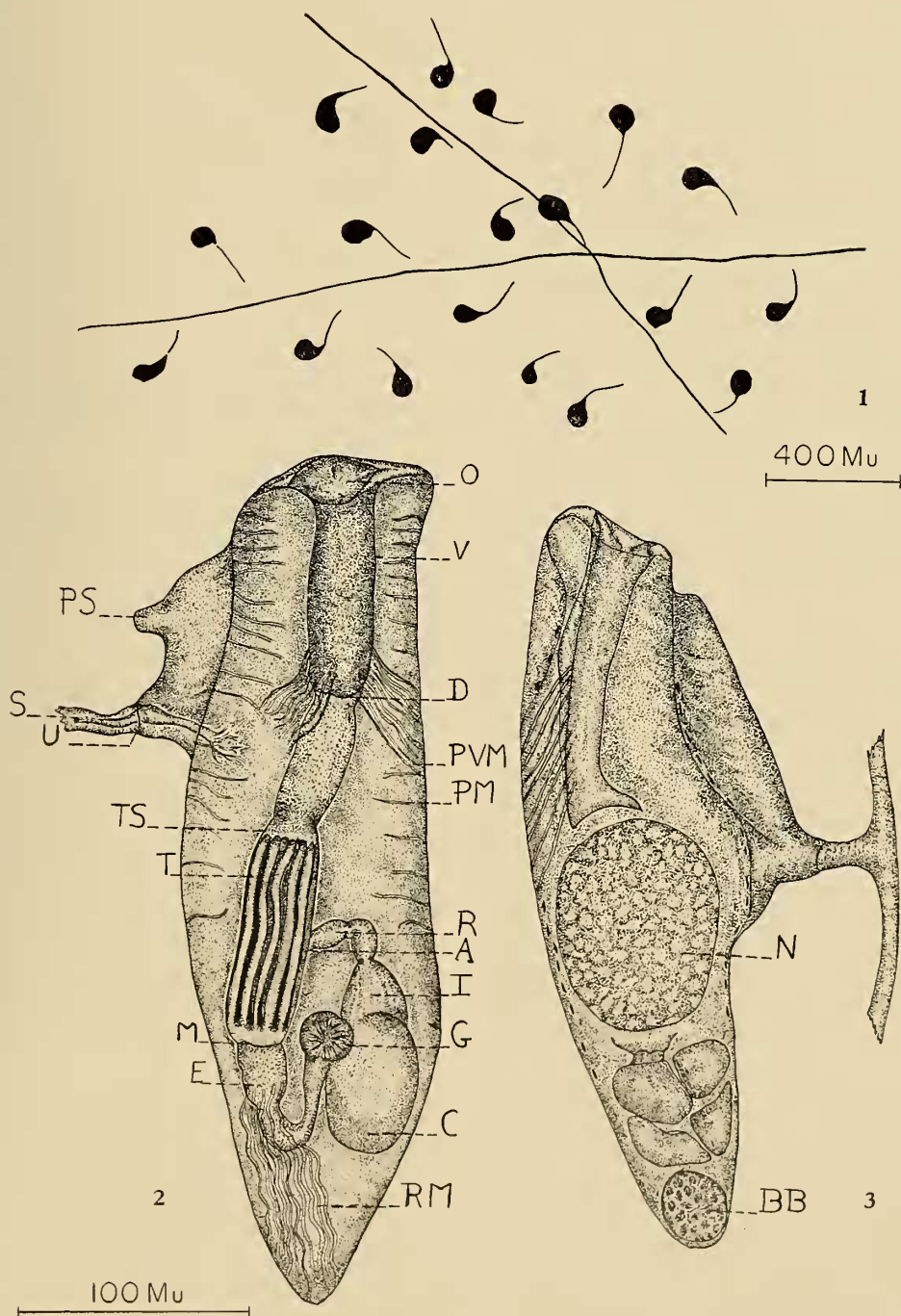
the genus *Terebripora* merely on the basis of shell tracings could as easily be assigned to *Immergentia* and that some of the *Spathipora* may well be *Penetrantia*. In so far as superficial external appearances are concerned, determination of the genera and the species is hopeless. On the basis of shell markings confirmed by anatomical studies, the burrowing Bryozoa until now fell into two groups: the *Terebripora-Immergentia* type and the *Spathipora-Penetrantia* type. *Terebripora ramosa* d'Orbigny readily fits into this pattern.

With the publication of Silen's work it therefore becomes necessary to amend the description of the genus *Terebripora* d'Orbigny, 1847, to include basic anatomical details which will serve to distinguish this genus from the genera *Spathipora*, *Immergentia*, and *Penetrantia*, respectively.

Genus *Terebripora* d'Orbigny, 1847

Zoaria stolonate, consisting of primary stolons joined to the zooids by secondary stolons, the point of union with the zooids being nearly midway between the distal and proximal extremities, but

¹ Contribution from the Allan Hancock Foundation. Received August 16, 1950.



FIGS. 1-3.—*Terebripora comma*, n. sp.: 1, Shell surface, showing a portion of a zoarium, and the characteristic shape of the apertures, dried specimen; 2, same, showing anatomy of the autozoid; 3, same, showing anatomy of the kenozoid. (A-anus; BB-brown body; C-caecum; D-diaphragm; E-esophagus; G-gizzard; I-intestine; M-mouth; N-embryo; O-orifice; PM-parietal muscle; PS-pseudo stolon; PVM-parieto-vaginales muscle; R-rectum; RM-retractor muscle; S-stolon; T-tentacle; TS-tentacle sheath; U-septum; V-vestibule.) Drawings by Dorothy F. Soule.

always closer to the distal end. Polypide with a prominent gizzard. The genotype is *Terebripora ramosa* d'Orbigny, 1847.

KEY TO THE GENERA

1. Zoaria with primary stolons connected to zoids by short secondary stolons, entering near distal end.
 - a. Zoids operculated, gonozoid present (Penetrantiidae) *Penetrantia*
 - b. Zoids not operculated, no gonozoid (Terebriporidae) *Terebripora*
2. Zoaria lacking secondary stolons.
 - a. Stolonal point of attachment at distal extremity (Immergentiidae) *Immergentia*
 - b. Stolonal point of attachment at proximal extremity (Terebriporidae) *Spathipora*

Actually there is considerable doubt as to the soundness of including the genus *Spathipora* in the family Terebriporidae because of its wide anatomical differences. However, until the opportunity to examine the zoids of the *Spathipora* presents itself, I believe it best to let the matter rest.

The exact dates of publication of the various installments of d'Orbigny's "Voyage dans l'Amérique Meridionale" have long been a controversial subject. Fortunately, the library of the Allan Hancock Foundation retains the original covers of the installments bound separately. The date 1847 for the genus *Terebripora* was selected following an examination of the original blue wrapper (cover) which contained among other items the zoophyte section and bears the printed date 1847, 89th "livraison."

KEY TO THE SPECIES WITH KNOWN ANATOMY

- Autozoid with 12 tentacles.....*T. ramosa*
 Autozoid with 8 tentacles.....*T. comma*

Terebripora comma, n. sp.

Diagnosis.—Successive zoids are alternately placed to the right and to the left of the primary stolon at the end of a short secondary stolon. From the primary stolons occasional thin branches extend upward to the shell surface where they emerge and appear as minute round dots. Autozoid elongate, tapering to a rounded point at the proximal end, occasionally with a pseudostolonal connective point distal to the actual secondary stolonal junction. Tentacle number of the autozoid is 8. Embryos develop in numerous kenozoids.

Description.—In *Terebripora comma* is found the first variation from the usual *Terebripora-Immergentia* type of surface tracings as delineated

in the introductory passage. The zoarium in its original state prior to decalcification of the mollusk shell has a very striking resemblance to the surface tracings of *Spathipora sertum* Fischer, 1866, as figured by the original author and later by Marcus. So close is this resemblance that if the anatomy were unknown it could be identified as Fischer's species with no risk of contradiction. There is also a remarkable resemblance to the original figure of *Spathipora longirima* Canu and Bassler, 1923. The openings of the immersed zoids are close without being crowded (Fig. 1). When a trace of the filiform stolon is in evidence on the shell surface the openings are found in alternate arrangement to the right and to the left of the stolonal path and have a distinct comma-like appearance.

In a zoarium removed by decalcification of the shell, the zoids are found to be of two types, the autozoids and the kenozoids. These zoids are alternately arranged along the thin threadlike primary stolon by means of very short lateral secondary stolons, each having a septum at the junction point where the stolon meets the zoid. These secondary stolons enter the zoids about midway between the distal and proximal extremities, but always nearer to the distal. Occasionally on both types of zoids will be found a short extension that appears to be a second or pseudostolonal connective point, but is without attachment to a secondary stolon and is located immediately distal to the true secondary stolon. The primary stolons, with a diameter ranging between $11.5\ \mu$ and $14\ \mu$ have additional septa separated by stolonal intervals of varying lengths. From the primary stolons an occasional thin branch occurs, extending upward to open as a minute circular dot on the shell surface.

Anatomically, the autozoids are typical of the usual ctenostomatous type (Fig. 2). In the polypide is found a prominent globular gizzard. In length the autozoids range from $320\ \mu$ to $350\ \mu$ and in width from $57\ \mu$ to $80\ \mu$. The tentacles are short and in serial sections were found to be 8 in number. The autozoids are elongate, with the distal aperture bluntly square and the proximal portion terminating in a tapering rounded point. None of the distinct spherical brown bodies so much in evidence in the *Penetrantia* and the *Immergentia* were found.

The numerous kenozoids, formerly functional autozoids now modified for reproduction, have a prominent large oval embryo of uniform diameter

measuring $69\ \mu$ at maturity (Fig. 3). The kenozoids vary in length from $299\ \mu$ to $334\ \mu$ and in width from $75\ \mu$ to $80\ \mu$. Structures that may be incipient brown bodies were found in a few of the kenozoids in the proximal tip below the degenerate polypide.

Terebripora comma differs from *T. ramosa* d'Orbigny in the following respects: (1) The tentacle number of *T. comma* has 8 tentacles, *T. ramosa* 12, *fide* Marcus; (2) *T. comma* has pseudostolonal connective points; (3) the zoaria of *T. comma* does not conform to the usual *Terebripora-Immergentia* surface pattern as is found in *T. ramosa*.

Holotype.—AHF no. 53.

Repository.—Allan Hancock Foundation, University of Southern California, Los Angeles, Calif.

Type locality.—Accession no. 403 T 112, southwest of Newport, Calif. trawl 112, 18 fathoms, June 16, 1915. In the shell of a dead *Polinices draconis*.

Additional distribution.—Hancock station no. 1937-50, 1 mile northwest of the west end of Anacapa Island, Calif., lat. $34^{\circ} 01' 32''$ N., long. $119^{\circ} 27' 30''$ W.; depth 38-43 fathoms; bottom sandy; March 24, 1950; in dead shell of *Epitonium* sp.?

REFERENCES

- CANU, F., and BASSLER, R. S., *North American early Tertiary Bryozoa*. U. S. Nat. Mus. Bull. 106. 1920.
- . *North American later Tertiary and Quaternary Bryozoa*. U. S. Nat. Mus. Bull. 125. 1923.
- MARCUS, E. *Bryozoarios perforadores de conchas*. Arq. Inst. Biol. 9 (25): 273-296. 1938.
- D'ORBIGNY, A. *Voyage dans l'Amerique meridionale*. Zoophytes 5 (4): 7-23. 1847.
- SILEN, L. *On two new groups of Bryozoa living in shells of molluscs*. Ark. Zool. 38B (1): 1-7. 1946.
- . *On the anatomy and biology of Penetrantiidae and Immergentiidae (Bryozoa)*. Ark. Zool. 40A (4): 1-48. 1947.

ZOOLOGY.—*A new Orconectes from the Pontchartrain watershed in Louisiana and Mississippi (Decapoda: Astacidae)*.¹ GEORGE HENRY PENN, Tulane University of Louisiana. (Communicated by Fenner A. Chace, Jr.)

The new crawfish described here apparently is limited in distribution to the cool-water, sand- and gravel-bottomed creeks and rivers that make up the Lake Pontchartrain watershed in southeastern Louisiana and adjoining parts of Mississippi. I take great pleasure in naming this new species in honor of my close friend and authority on North American crawfishes, Dr. Horton H. Hobbs, Jr., of the University of Virginia.

Orconectes (Orconectes) hobbsi, n. sp.

Diagnosis.—Rostrum with prominent lateral spines, upper surface deeply concave, no median carina. Areola very narrow, its length averaging 24 times its width. Thoracic region of cephalothorax about 28 percent of the total length of the cephalothorax. Male with hooks on ischiopodites of third pereopods only. First pleopod of form I male terminating in two long, setiform, deeply split rami; central projection corneous and recurved at right angles to the shaft; mesial proc-

ess troughlike just proximad of the apex, recurved at about 90° angle to shaft. Annulus ventralis of female immovable, surface contours and sinus as in Fig. 8; may be either right- or left-handed.

Holotypic male, form I.—Body subovate, not depressed (Figs. 1, 2). Abdomen narrower than cephalothorax. Width of cephalothorax at widest point slightly greater than depth at same point.

Areola very narrow (24 times longer than width), without any punctations in narrowest part; cephalic portion of cephalothorax about 2.6 times as long as areola; length of areola 28 percent of total length of cephalothorax.

Rostrum with prominent lateral spines; widest at base, margins raised, more or less straight and converging; no median carina. Acumen long, acute.

Postorbital ridges prominent, terminating cephalad in acute corneous spines. Branchiostegal spine small, but prominent. Cephalic groove interrupted in vicinity of cephalolateral spines, the latter very prominently developed.

Cephalic region of telson with two spines in each caudolateral angle, the more lateral spine about twice the length of the mesial one.

¹ Aided by a grant from the University Council on Research of the Tulane University of Louisiana. Received June 23, 1950.